

REMARKS

New claims 33-37 are added. Claims 5-37 are pending in the application.

Claims 5-9, 11-15, 17-22 and 25-29 stand rejected under 35 U.S.C. §102 as being anticipated by Watanabe et al. (U.S. Patent No. 6,153,898). Claims 10, 16, 23, 24, 30 and 31 stand rejected under 35 U.S.C. §103 as being unpatentable over Watanabe. Claim 32 stands rejected under 35 U.S.C. §103 as being unpatentable over Watanabe in view of Ochiai (U.S. Patent No. 6,043,526).

Regarding the anticipation rejection against claim 5 based on Watanabe, such claim recites one of the metals when bonded with oxygen having a first current leakage potential and another of the metals when bonded with oxygen having a second current leakage potential which is greater than the first current leakage potential. The Examiner correctly states that this limitation is not explicitly taught by Watanabe (page 7 of Paper No. 21). The Examiner thereafter relies upon inherency stating the reference teaches the metal oxide layers with **difference concentrations** of the **first element** will inherently have different current leakage potentials and different dielectric constants (pg. 7 of paper no. 21). Assuming *arguendo*, even if current leakage potentials and different dielectric constants are considered inherent from Watanabe, such fails to disclose or teach **one of the metals** when bonded with oxygen having a first current leakage potential and **another of the metals** when bonded with oxygen having a second current leakage potential which is greater than the first current

leakage potential as positively claimed. That is, **difference concentrations** of the **first element** is not claimed, and therefore, whether or not such is taught inherently is not a relevant consideration for a proper rejection. Therefore, a positively recited limitation of claim 5 is not taught or disclosed by Watanabe. Claim 5 is allowable. For at least this reason, Applicant respectfully requests allowance of claim 5 in the next office action.

Additionally, the claimed subject matter is not inherent from the teachings of Watanabe. The Examiner is respectfully reminded that the Federal Circuit Court opined that "[t]he courts have not upheld arguments based on 'inherent' properties when there is **no supporting teaching in the prior art.**" *In re Dillon*, 892 F.2d 1554, 13 USPQ2d 1337, 1348 (Fed. Cir. 1989) (citations omitted) (emphasis added). The Federal Circuit Court then mandated providing supporting references, "[w]hen the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, the PTO **must produce supporting references.**" *Id.* (emphasis added). Consequently, the requirement for a proper rejection based on inherency can not be more clear and a conclusory statement to inherency is simply not enough. Therefore, given the clear Federal Circuit authority to provide supporting references, which the Examiner fails to do, the rejection against claim 5 based on inherency is inappropriate and must be withdrawn. For this additional reason, Applicant respectfully requests allowance of claim 5 in the next office action.

Claims 6-11 and 33 depend from independent claim 5, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not taught or shown by the art of record.

For example, claim 10 is rejected for obviousness over the single reference of Watanabe. Such claim recites a metal oxide with multiple different metals bonded with oxygen comprises a titanate, and one metal comprises titanium. The Examiner correctly states that Watanabe does not expressly teach a titanate or titanium (pg. 5 of paper no. 21). However, the Examiner alleges since Watanabe teaches to metals bonded with oxygen which may be strontium, bismuth, tantalum, niobium, barium or calcium, and that titanate and titanium are refractory metals similar to such metals allegedly taught by Watanabe, it would have been obvious for one skilled in the art to substitute a similar metal for another in the course of routine experimentation. However, such is simply stating that since one can substitute a metal for another, such is obvious, contrary to well established law.

The Examiner is respectfully reminded that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP §2143.01 (8th edition) *citing In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in

the reference to do so". 916 F.2d at 682, 16 USPQ2d at 1432; MPEP §2143.01; See also *In re Finch*, 972 F.2d, 1260, 23 USPQ2d, 1780 (Fed. Cir. 1992). In the rejection against claim 10, the Examiner is merely stating one can modify the teachings of Watanabe by substituting one metal for another, contrary to the above authority requiring a teaching in the prior art for the desirability of the modification. Since the Examiner fails to provide any motivation for the modification of Watanabe, the rejection is inappropriate and should be withdrawn. Applicant respectfully requests withdrawal of such obviousness rejection, and allowance of claim 10, in the next office action.

Regarding the anticipation rejection against claim 12 based on Watanabe, claim 12 recites one of the metals when bonded with oxygen producing a first material having a first current leakage potential, and absence of the one metal in the oxide creating a vacancy and a second material having a second current leakage potential which is greater than the first current leakage potential. The same inherency rationale for rejecting claim 5 is presented for rejecting claim 12 (pgs. 2 and 7 of paper no. 21). Accordingly, for all the reasons discussed above with respect to the allowance of independent claim 5, the rejection against claim 12 is inappropriate and should be withdrawn. For at least this reason, claim 12 is allowable.

Moreover, the Examiner fails to provide any teachings or suggestions to the recitation of the absence of the one metal in the oxide **creating a vacancy** as recited in claim 12. An electronic search of Watanabe verifies there is no



teaching or suggestion to such limitation. Consequently, Watanabe fails to teach or suggest a positively recited limitation of claim 12, and therefore, for this additional reason, claim 12 is allowable. Applicant respectfully requests allowance of claim 12 in the next office action.

Claims 13-17 and 34 depend from independent claim 12, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not taught or shown by the art of record.

Regarding the anticipation rejection against claim 18 based on Watanabe, claim 18 recites one of the metals when bonded with oxygen having a first dielectric constant, and another of the metals when bonded with oxygen having a second dielectric constant which is less than the first dielectric constant. The same inherency rationale for rejecting claim 5 is presented for rejecting claim 18 (pgs. 3-4 and 7 of paper no. 21). Accordingly, for all the reasons discussed above with respect to the allowance of independent claim 5, the rejection against claim 18 is inappropriate and should be withdrawn. Since no other rejections are presented against claim 18, claim 18 is allowable. Applicant respectfully requests allowance of claim 18 in the next office action.

Claims 19-24 and 35 depend from independent claim 18, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not taught or shown by the art of record.

Regarding the anticipation rejection against claim 25 based on Watanabe, claim 25 recites one of the metals when bonded with oxygen producing a first material having a first dielectric constant, and absence of the one metal in the oxide **creating a vacancy** and a second material having a second dielectric constant which is less than the first dielectric constant. The same inherency rationale for rejecting claim 5 is presented for rejecting claim 25 (pgs. 3-4 and 7 of paper no. 21). Accordingly, for all the reasons discussed above with respect to the allowance of independent claim 5, the rejection against claim 25 is inappropriate and should be withdrawn. For at least this reason, claim 25 is allowable.

Moreover, the Examiner fails to provide any teachings or suggestions to the recitation of the absence of the one metal in the oxide **creating a vacancy** as recited in claim 25. An electronic search of Watanabe verifies there is no teaching or suggestion to such limitation. Consequently, Watanabe fails to teach or suggest a positively recited limitation of claim 25, and therefore, for this additional reason, claim 25 is allowable. Applicant respectfully requests allowance of claim 25 in the next office action.

Claims 26-31 and 36 depend from independent claim 25, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not taught or shown by the art of record.

Regarding the obviousness rejection against claim 32 based on Watanabe in combination with Ochiai, such claim recites electrodes comprise material of at least one of conductively doped polysilicon, conductively doped hemispherical grain polysilicon, tungsten, tungsten nitride, tantalum nitride, titanium nitride and titanium oxygen nitride. The Examiner correctly states that Watanabe fails to teach electrodes comprising titanium nitride and relies on Ochiai to allegedly teach such limitation (pg. 6 of paper no. 21). The Examiner presents an alleged motivational rationale for the combination stated as, it would have been obvious for one skilled in the art to use such a layer as disclosed by Ochiai for decreasing the contact resistance and cites to col. 7, Ins. 38-41 of Ochiai (pg. 6 of paper no. 21).

However, Ochiai is completely devoid of a teaching or suggestion to electrodes comprising material of at least one of conductively doped polysilicon, conductively doped hemispherical grain polysilicon, tungsten, tungsten nitride, tantalum nitride, titanium nitride and titanium oxygen nitride as recited in claim 32. An electronic search verifies the same. The citation to col. 7, Ins. 38-41 of Ochiai on which the Examiner relies teaches to use a TiN layer between a tungsten contact plug 19 and an insulation layer 20 to obtain a low contact resistance and for ensuring better adhesion of the tungsten (col. 7, Ins. 22-44). Ochiai teaches forming electrodes from RuO_x (col. 8, Ins. 26-30; col. 9, Ins. 14-18; col. 10, Ins. 11-15) and platinum (col. 11, Ins. 1-4), only. One would not combine the inapposite TiN layer teachings with Watanabe because even if

combined, the combination fails to teach or disclose or suggest TiN electrodes. Accordingly, the motional rationale does not exist, and therefore, for at least this reason the obviousness rejection fails. Moreover, Ochiai and Watanabe, singularly or in any combination, fails to teach or suggest electrodes comprises material of at least one of conductively doped polysilicon, conductively doped hemispherical grain polysilicon, tungsten, tungsten nitride, tantalum nitride, titanium nitride and titanium oxygen nitride as recited in claim 32. Consequently, the combination of art fails to teach or suggest a positively recited limitation of claim 32, and therefore, the obviousness rejection fails for this additional reason. Claim 32 is allowable and Applicant respectfully requests allowance of claim 25 in the next office action.

Claim 37 depends from independent claim 32, and therefore, is allowable for the reasons discussed above with respect to the independent claim, as well as for its own recited features which are not taught or shown by the art of record.


Additionally, Applicant must again request the submission of prior art which allegedly discloses the limitations of the claims, or an affidavit attesting to the Examiner's knowledge pursuant to 37 CFR §1.104(c)(2).

Further, Applicant herewith submits duplicate copies of the previously submitted PTO-1449s. No initialed copy of the PTO-1449 has been received back from the Examiner. To the extent that the submitted references listed on the Form PTO-1449s have not already been considered, and the Form PTO-1449 has not been initialed with a copy being returned to Applicant, such examination and initialing is requested at this time, as well as return of each copy of the initialed Form PTO-1449s to the undersigned.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

Dated: 11-12-02

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Inventor Vishnu Agarwal
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Group Art Unit 2815
Examiner Jesse A. Fenty
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Multiple Different Metals Bonded With Oxygen

**VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING
RESPONSE TO AUGUST 9, 2002 OFFICE ACTION
TO ACCOMPANY CPA FILING**

In the Claims

The claims have been amended as follows. Underlines indicate insertions
and ~~strikeouts~~ indicate deletions.

There are no amendments to the claims.

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